

**Remarks**

By the foregoing Amendment, claims 1-13, 17, 19-21, 23, 30-31, 35-46, and 50-53 are amended. No new matter is added by this Amendment. Entry of the Amendment, and favorable consideration thereof, is earnestly requested.

The Examiner has indicated that all German text in the drawings must be replaced with English text at this time. Accordingly, replacement sheets 1-11 have been submitted for Figures 1-8.

The Examiner has rejected claims 1, 23, and 30 under 35 U.S.C. §112, 1<sup>st</sup> paragraph for lack of enablement. Specifically, the Examiner objects to the recitation of controlling “at least one” temperature. Accordingly, applicant has amended these claims to refer to a plurality of temperatures, which, as indicated by the Examiner, is disclosed at page 3 of the specification.

The Examiner has rejected independent claims 1, 23, 29, and 30 under 35 U.S.C. 35 U.S.C. §103 as obvious over Schmitz (“MOVPE growth of InGaN on sapphire using growth initiation cycles”) in view of Burmeister (U.S. Patent No. 3,617,371), and further in view of de Waard et al (U.S. Patent No. 6,373,033) or Stoddard et al (WO 98/35531).

Though the Examiner has rejected independent claim 29 along with the other three independent claims (1, 23, 30), Applicant respectfully notes that the Examiner has not provided any explanation for this rejection. The Examiner has rejected the independent claims on the basis of references (de Waard; Stoddard) that the Examiner asserts read on the claim element “controlling at least one temperature.” However, unlike claims 1, 23, and 30, which recited “at least one” temperature (now amended to “a plurality”), claim 29 recites controlling the temperatures of all eight specifically identified locations of the reactor. Accordingly, Applicant submits that claim 29 was not

properly rejected, even if the de Waard or Stoddard references are combined with the previously cited references, as they do not disclose a reactor having all of these parts, and controlling all of these individual parts in accordance with numerically simulated temperature variation profiles. Moreover, applicant notes that one skilled in the art would not modify these references in this way as there is no suggestion or motivation in these references to exercise control of all of the identified specific locations of the reactor of claim 29 in correspondence with numerically simulated temperature variation profiles.

As noted above, the Examiner has also rejected independent claims 1, 23, and 30 in light of these references. Accordingly, claims 1, 23, and 30 have been amended to further clarify the operation of the invention. Support for these amendments is found throughout the specification and drawings, and particularly, at page 3, para. 4; page 12, para. 1; page 10, para 3; page 11, para. 4-5 (cont. p. 12); and pages 6-7.

As the Examiner has acknowledged, the combination of Schmitz and Burmeister do not teach controlling the temporal variation of at least one process temperature in correspondence with a numerically simulated temperature variation profile. Accordingly, claims 1, 23, and 30 are not obvious in light of the combination of these two references alone. However, the Examiner has indicated that de Waard and Stoddard read on this element, and that therefore, the combination of either of these references with both Schmitz and Burmeister anticipates claims 1, 23, and 30.

Accordingly, these claims have been amended to more clearly detail how the temperatures in the reactor are controlled. The claimed system for semiconductor crystal production sets forth a reactor with a specific structure, which manages the temperature of the reactor by controlling the various specific portions thereof. As indicated on page 3 of the specification, in order to properly control these different portions of the reactor, the system takes into account the temperatures of these various specific parts, variations of those temperatures, and the correlation among those

different temperatures. Claims 1, 23, and 30 have been amended to more accurately reflect these considerations. For example, claims 1, 23, and 30 each recite calculating at least one gradient between at least two of the temperatures, which is used to control the temperature variation in the reaction chamber. As one example, a temperature gradient between the gas inlet and the wafer support could be calculated and used to help avoid the formation of adducts or undesirable pre-reaction products. None of the cited references, either alone or in combination, disclose controlling the temperature of the reactor as recited in claims 1, 23, or 30, as amended.

It is respectfully submitted that claims 1-17 and 19-59, all of the claims remaining in the application, are in order for allowance, and early notice to that effect is respectfully requested.

Respectfully submitted,



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**Amendments to the Drawings**

Please amend Figures 1-8 according to the replacement sheets submitted herewith.